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A biweekly update on blockchain technology applications, distributed energy resources, and other innovative technologies in the energy sector.

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There is a lot of buzz around blockchain technology, distributed energy resources ("DERs"), microgrids, and other technological innovations in the energy industry. As these innovations develop, energy markets will undergo substantial changes to which consumer and industry participants alike will need to adapt and leverage. Every other week, K&L Gates' The Energizer *will highlight emerging issues or stories relating to the use of blockchain technology, DERs, and other innovations driving the energy industry forward. To subscribe to* The Energizer *newsletter, please click here.*

Power Ledger and Kepco Complete P2P Trading Trial

- Power Ledger, an Australian-based blockchain energy trading platform, and KEPCO, a major Japanese utility, tested a blockchain-based peer-to-peer ("P2P") electricity trading pilot for post-feed in tariff surplus power in Osaka, Japan. Over the course of five months, participants exchanged solar-generated electricity using Power Ledger's blockchain to autonomously and automatically execute transactions, including payment settlement. Consumers purchased electricity with Sparkz tokens, a digital token native to Power Ledger's blockchain. Sparkz tokens can be converted to fiat currency through certain entities licensed by Power Ledger. Participants traded more than 55kWH of solar energy per week.

- Japan is scheduled to reduce its feed-in tariff for solar generation for 500,000 current recipients in October. Power Ledger and KEPCO believe that a P2P trading platform for solar energy provides prosumers the opportunity to offset their reduced savings, thereby incentivizing prosumers to continue using and generating solar energy rather than reverting to fossil fuel-based electricity. Power Ledger believes its system could save consumers billions of dollars while maintaining Japan's solar power market.

- A blockchain-based P2P electricity trading platform could help create more resilient and efficient electricity markets in a variety of ways. First, such platforms could facilitate the creation of microgrids and ensure their resiliency by enabling the seamless exchange of electricity between prosumers located in the same area. Second, such platforms enable prosumers to leverage distributed energy resources and battery storage technology more effectively by creating a market for surplus generation. Third, integrating cryptocurrencies in such platforms allow for near instantaneous settlement, thereby creating one system for the exchange and payment of electricity. Fourth, P2P trading platforms will reduce strain an electricity grids and make it easier to reach demand peaks by allowing more stores of electricity to be used. Fifth, such platforms (depending on their structure) create an

auditable and immutable ledger that can also protect users' privacy. However, as KEPCO has noted, "there are still many challenges like amendments of relevant laws for commercialization." Similar concerns must be addressed by P2P trading, blockchain-enabled or not, implemented across the United States.

- This trial also demonstrates the potential viability of a product/service-specific cryptocurrency. By using Sparkz tokens, participants settled transactions on Power Ledger's blockchain rather than through the Japanese banking system. Seamless payments, if scalable, provide significant potential but also raise questions about the need for fungible digital tokens and the regulatory implications of issuing digital tokens.

Glendale, California, Drops Gas Plant for Clean Integrated Resource Plan

- On July 23, 2019, Glendale's city council formally abandoned plans to repower the Grayson Power Plant, a $500-million 262-megawatt ("MW") gas plant, in light of Glendale Water & Power's ("GWP") examination of clean energy alternatives to be included in its integrated resource plan ("IRP"). Since April 2018, GWP has examined 34 clean energy proposals. Based on its review, it selected a mixed portfolio for its IRP, explaining that the selected mix will meet consumers' electricity demands while saving them $125 million.

- GWP's final portfolio will replace the energy provided by the Grayson Power Plant with a 750-MW/300-MW-hour battery, 50 MW of distributed energy programs, and 93 MWs of fast-ramping Wärtsilä engines. The proposed 50 MW of distributed energy programs will include 12.8 MWs from Sunrun home solar and batteries, 10.5 MWs of demand response by Franklin Energy, and 20.4 MWs of energy efficiency and demand response from Lime Energy. Currently, the Wärtsilä engines are fossil fuel reliant. However, GWP plans to modify them to be fueled by biogas, renewable natural gas, or even hydrogen as the technology becomes available.

- GWP believes the combination of solar, batteries, and efficiency investments will lower peaks and reduce customer bills, while meeting local capacity demands during extreme events. The city council has preliminarily approved the IRP, but GWP still must finalize the contracts and conduct a new round of environmental review. The city council likely will not be able to provide final approval until the spring of 2020.

- The Grayson Power Plant is the sixth California gas plant proposal that has been rejected in 2019. The shift to clean(er) energy resources and the development of battery technology has undermined gas plants' ability to compete in recent years.

BPX Energy and Ondiflo Finish Blockchain Pilot Program

- On July 30, 2019, Ondiflo, an oil and gas industry blockchain program, announced the successful completion of its Proof of Value ("PoV") project with BPX Energy. Through the PoV project, BPX Energy used Ondiflo's blockchain-based platform to record fluid hauling data from BPX Energy's East Texas service region, recording data from more than 10,500 hauls. To do so, BPX Energy installed sensors in 50 metered wells. The sensors measured the water tank levels and reported the data to Ondiflo's blockchain every five minutes. To match the data reported by the meter wells to the corresponding field tickets prepared by the fluid hauling companies who delivered the fluid, more than 11 dispatchers and 65 truck drivers submitted their tickets to Ondiflo through an application program

interface connected to its blockchain. By the pilot's sixth week, the haul measurements matched the corresponding field tickets with more than 90 percent accuracy.

- BPX Energy implemented the pilot program to measure the cost savings and efficiency gains Ondiflo's platform could provide its fluid hauling operations. To that end, the pilot appears to have been successful, as Ondiflo reported that the PoV pilot increased optimization of dispatches. Moreover, Ondiflo's blockchain and smart contracts minimized the time to confirm a ticket was completed and to approve payment for that ticket. A blockchain platform like the one Ondiflo developed has the potential, as this pilot demonstrates, to reduce procure-to-pay time cycles, increase asset utilization, and optimize field tracking activities through the use of smart contracts and transparent data capture. The ability to provide these benefits at scale will be an important development.

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